IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No.   :   10/065,089   Confirmation No.: 4152
Applicant   :   Hall et al.
Filed   :   September 16, 2002
Art Unit   :   2672
Examiner   :   Lee, Hwa C.
Docket No.   :   012438-000004
Customer No.:   24,239

For   :   Method and System for Remotely
Providing User-Defined Cutting Files
for CNC Robotic Tools

Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

DECLARATION OF WARREN G. HALL UNDER 37 C.F.R. § 1.132

Sir:

I, Warren G. Hall, declare as follows:

1.   I am a United States citizen residing at 5520 Lockridge Road, Durham, North Carolina, 27705.

2.   I received a Bachelor's degree from the University of Arizona in 1971 and a Ph.D. from Johns Hopkins University in 1975. I then did post doctoral work at Rutgers University for two years. For the last 26 years I have been a research scientist in neuroscience at Duke University in Durham, North Carolina. I am currently A.W. Deane Distinguished Professor of Comparative Neurobiology. Much of my research has involved the interface of machinery and test equipment with computers.

3.   I am a co-inventor of the above-captioned patent application for United States Letters Patent (the "Application").

4.   I hold patents on CNC machinery, boatbuilding, and classical conditioning.

5.   I am familiar with the Application, the references cited on the Applicant's Information Disclosure Statement, the references cited by the Examiner of the Application, the substantive Office Action from the Examiner, and the Applicant's response to the substantive Office Action.

6.   I have personal knowledge of the design and operation of robotic tools and computer numerical controlled apparatus and computer files that control the tools.

7.   It is my professional opinion that the Bigelow publication (U.S. Patent Publication No. 2004/0138775) cited by the Examiner describes an ASP-type (active server page) networked system for managing CAD (computer aided design) objects and components, as set forth in that publication. However, the Bigelow publication is oriented to CAD objects and not tool paths. While it does suggest that a CAD product can be exported to CNC machines, it is a very abstract description of the export that is not enabling to one of ordinary skill in the art. In order to machine a part, the three dimensional CAD objects of Bigelow would need to be re-expressed as three dimensional tool paths so that they can be cut or machined. Generally speaking the Bigelow CAD drawing does not represent a tool path or tooling motions. In particular, three dimensional CAD objects do not intrinsically contain tool paths or machining instructions. Such tool-pathing often depends on specifications and choices that are made for particular machines, machining strategies, and operators. Bigelow does not disclose tool path instructions.

8.   It is my professional opinion that a significant thrust of the Fishman patent

(U.S. Patent No. 6,112,133) cited by the Examiner is that a CAD drawing does

not contain adequate information for machining. Fishman further describes a

method by which the operator can use software locally to generate tool paths in

relation to surfaces or shapes described by CAD drawings that he or she desires

to machine.

9.   It is my professional opinion that neither Bigelow nor Fishman include the

element of making a CNC cutting file by using a generic model (which includes

information for a generic cutting file) as claimed in our application.

10.   It is my professional opinion that Bigelow does not describe a system

oriented to the actual cutting and machining of parts or any orientation to CNC

machines. Bigelow does not appreciate the need for an underlying cutting file as

a part of the process.

11.   It is my professional opinion that Fishman reflects the current reality of the

difficulty of getting from a CAD object to tool paths appropriate to production of a

part. Fishman addresses the problem with a solution that is local to the

operator's tool, rather than the approach described in our application, a

centralized approach in which the information intrinsic to the CNC production of

the object is present in the object design and modification system and available

over the network to potential users.

12.   It is my professional opinion that because Fishman is directed only

towards local production of cutting files, rather than remote cutting files made on

a server, it cannot be combined with Bigelow to result in our invention. Fishman

shows that CAD objects themselves, as described in Bigelow, do not specify how to make a part; some additional method is needed. Fishman only helps the user at the tool, however, not through a central server. Fishman would direct one of ordinary skill in the art away from Bigelow and Bigelow's disclosure of remote creation of CAD objects.

13.   Our invention as claimed includes the use of conceptual generic models. The generic models, or objects, because of the way they are parametrically created, intrinsically contain information to generate an image or drawing as well as full tool path and machining information, ready to run without user intervention on a CNC machine. Neither Bigelow nor Fishman disclose such an operation.

14.   Thus, it is my opinion that the combination of references cited by the Examiner does not render our invention obvious.

15.   Our invention is quite likely to be commercially successful. From November of 2004 my company, ShopBot Tools, Inc. of Durham, NC has had a prototype web site in operation demonstrating our interactive CNC technology. While making only a couple of projects available and not having advertised the site at all, we have still had several hundred downloads of custom CNC cutting files. This interest and potential success may be attributed to the ease of use of the invention and that no similar solution to this challenge for CNC work exists.

16.   I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or

imprisonment, or both, under Section 1001 of Title 18 of the United States Code,

and that such willful false statements may jeopardize the validity of the

application or any patent issued thereon.

This 9th day of February, 2005.

Warren G. Hall